The "Pitfall" of Normal Results of Urinalysis

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AS SYMPTOMS referable to genitourinary diseases are frequently vague and all too often do not follow the pattern commonly attributed to those diseases, the basic diagnostic study must be started with an open mind and the laboratory work confined to urine analysis and blood count. Occasionally when the urine analysis is reported as normal the tendency is to dismiss all possibility of urinary tract disease. This is a common "pitfall," and for that reason the following representative case histories are of interest. It will be well to note in the following reports the long duration and frequently the advanced state of the disease in the presence of normal urine.

CASE REPORTS

CASE 1.—The patient, a woman aged 40, for eight years had had recurrent dysuria, frequency and pain in the area of the urethra upon voiding. There was no apparent reason for a fever of 99 to 100° F. which had not responded to penicillin. (The patient was sensitive to sulfonamides.) Examination revealed a blood pressure of 175 mm. of mercury systolic and 110 mm. diastolic. A moderately tender, smooth and movable mass was palpated in the right upper quadrant of the abdomen extending into the right loin. Urine analysis and cultures gave normal results upon several occasions. Cystoscopic examination and pyelograms revealed a moderately severe cystitis, right nephroptosis with ureteral kinking and early right hydronephrosis with definite decrease in function. Right nephropexy was performed and examination one year later revealed a decrease in hydronephrosis and the patient was free of all symptoms. Normal urine analysis findings previously had forestalled a complete study, with the result that the patient had been treated for cystitis alone.

CASE 2.—A woman 29 years of age had been having episodes of left costovertebral angle pain, nausea, vomiting and fever for two years. There had been no dysuria, frequency, hematuria, gravel or other symptoms. Results of urine analysis usually were normal, but occasionally pus was found. Examination revealed temperature of 99.4° F. and tenderness in the left costovertebral angle but no other abnormalities. Cystoscopy and pyelograms disclosed bilateral hydronephrosis due to obstruction at the ureteropelvic junctions. Bilateral aberrant vessels were removed, bilateral nephropexies and pyeloureteroplasties were done, and the patient obtained complete relief of symptoms. Had the urine analysis not been repeated several times the relation of the symptoms to the urinary tract might have been missed.

CASE 3.—A boy 17 years of age was referred for urological consultation because of episodes of left abdominal pain which had occurred every five to six months since childhood. They were frequently associated with left costovertebral angle pain, nausea and fever, but because of repeatedly normal results of urine examination, no genitourinary studies had been done. Examination revealed some tenderness in the left costovertebral angle and left side of the abdomen. Upon cystoscopy the bladder was found to be normal, but pyelograms revealed bilateral hydronephrosis with obstruction at the ureteropelvic areas and definite decrease in the function of each kidney. Both ureters were dilated to 10 (French) for several months but the symptoms continued, and eventually when an operation was performed, bilateral congenital ureteral fibromuscular strictures were found and pyeloureteroplasties were done. The patient was free of symptoms during several months of observation following the operation. Had undue importance not been ascribed to the normal results of urine analysis, the diagnosis and treatment might have been carried out earlier.

CASE 4.—A 67-year-old man was referred with total gross hematuria. Results of urinalyses prior to this, however, had always been normal and there was no history of symptoms indicating genitourinary disease. Thorough studies revealed that the patient had a contracture of the bladder neck, a small fibrous obstructing prostate, a large diverticulum of the bladder, within which was a papillary carcinoma and a left hydronephrosis. All these conditions have been surgically corrected. This case is described to demonstrate that advanced genitourinary disease of long duration may cause no abnormality in results of urine analysis. The diverticulum had probably been steadily developing since childhood, the carcinoma for six to twelve months and the hydronephrosis for several months.

CASE 5.—A woman, 48 years of age, had had vague left loin pain for many years, and once, 20 years before, had had gross hematuria. She was continually under medical care because of hypertension, and the urine, when analyzed from time to time, usually was found to contain albumin. Because it had never contained leukocytes or erythrocytes, no further studies of the kidneys were made until the patient had severe left renal colic. The pyelogram revealed a large left hydronephrosis. The diseased kidney was removed. Incidentally, the hypertension has been much less following the operation.

CASE 6.—The patient, a woman 26 years of age, had been receiving dilatations of the right ureter in various cities for four years. The chief symptom was right costovertebral angle pain which was so severe that it had practically incapacitated her for the previous year. The patient also frequently had nausea, fever, dysuria and frequency, but results of urine analyses, which had shown the presence of infection the first three years, had been normal the last year. Examination proved the right costovertebral angle area to be tender. Cystoscopy showed a normal bladder. Pyelograms demonstrated bilateral bifid renal pelvices with the upper calyx on the right dilated and draining through a long narrow infundibulum. Heminephrectomy was attempted but because of technical difficulties it was necessary to do a nephrectomy. The patient since has had complete relief of symptoms and is now quite active and normal. This case is presented to demonstrate that longstanding incapacitating disease in the genitourinary tract may cause no abnormalities in the urine.

CASE 7.—A 26-year-old woman complained of pain in the right side of the abdomen and loin. The temperature was 101° F. Six months before, laparotomy and appendectomy had been done for relief of the same symptoms, but no evidence of disease was found at that time. The symptoms subsided with bed rest. In complete urological studies, results of six urine analyses were normal, but pyelograms showed right hydronephrosis and a suggestion of an aberrant vessel. This was removed surgically and a nephropexy done, with relief of symptoms.

CASE 8.—The patient, a woman aged 37, for several years had had recurrent episodes of dysuria, frequency, fatigue, nervousness and dull constant bilateral costovertebral angle pain. When physical examination revealed no abnormalities, and the results of several urine analyses were normal, the most apparent diagnosis seemed to be psychoneurosis. Urine cultures were done, however, and a growth of B. Aerogenes found. Pyelograms (Figure 1) show the extent of involvement. This case was one of polycystic disease of the kidney.

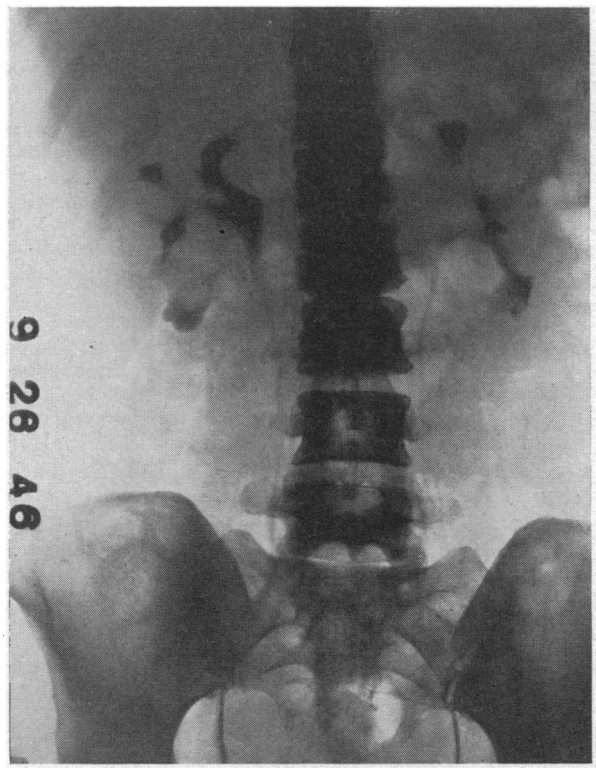

Figure 1.—Case 8: Polycystic disease.

CASE 9.—The patient, a woman 53 years of age, complained chiefly of dull constant pain felt in the left buttock. Hysterectomy had been done six months before because of abdominal pain. There were no urinary symptoms of any sort and results of urine analysis were normal. Blood pressure was 176 mm. of mercury systolic and 106 mm. diastolic. There was a movable, heavy, non-tender mass in the left loin. At cystoscopy the bladder was found to be normal. Urine specimens from both kidneys were normal, and function was good bilaterally. However, pyelograms were suggestive of a tumor in the left kidney. A hypernephromatous kidney was removed.

In view of the minimal symptoms and the normal urine, the referring physician deserves much credit for obtaining complete urological studies so early. It is only by such early diagnosis that cures can be obtained in this condition. In approximately 70 per cent of cases, hypernephromata cause no abnormalities in the urine.

CASE 10.—The patient, a girl ten years of age, had had an episode of rheumatic fever at the age of seven. At that time it was noticed there was a trace of albumin in the urine but because of the absence of pyuria and the dearth of symptoms suggesting urinary tract disease, the illness was considered as caused entirely by rheumatic fever and no further genitourinary studies were done. Although albuminuria continued for several years, it was still considered an aftermath of rheumatic fever until the family consulted another pediatrician and urological studies were obtained. Urine from the bladder and from the left kidney were found to be swarming with Gram negative bacilli, but urine from the right kidney was normal. The number of pus cells was always less than five per high power field. Pyelograms demonstrated left hydronephrosis and hydroureter with a stricture in the lower third of the left ureter. Treatment with chemotherapy and dilatation of the ureter have produced complete freedom from fever and other symptoms.

DISCUSSION

The ten cases presented, selected to demonstrate that obscure renal disease may occur at all ages in both sexes, illustrate that advanced urinary tract disease may exist and yet the urine be normal. For this reason it is wise to repeat urine analysis several times when the clinical picture is obscure and the diagnosis uncertain. When caring for a patient over a period of time it is often noticed that both erythrocytes and leukocytes appear in the urine in "showers" and that when these are washed away the urine is normal for a time. A specimen taken during a normal period would tend to throw one off the track.

In the preceding case histories it will be noted that in several instances the symptoms seemed typical of renal disease but inasmuch as results of urine analyses were normal, the logical diagnosis was set aside for a time and it was not until complete urological studies were made that the true state of affairs was found. All too often we treat the patients in such circumstances for recurrent cystitis and because of a reluctance on the part of the patient to undergo further examination or a feeling by the physician that the urinary symptoms are not disabling, no further study is made and it is not until considerable permanent damage is done to the urinary tract that the diagnosis is finally made.

The cases reported are not unusual. Included are cases in which the symptoms were caused by aberrant vessels, nephroptoses, intramural ureteral strictures, tumors, polycystic kidneys, hydrocalyces, diverticula of the bladder and carcinoma of the bladder. These are typical average genitourinary cases and represent a wide range of disease entities, yet all occurred in the presence of apparently normal urine.

For investigation of the urological tract no examination can take the place of cystoscopy and retrograde pyelograms. Intravenous pyelograms are useful but they leave much to be desired in demonstrating the bladder and ureters. They also frequently give a false sense of security concerning renal disease when the pelvis and calyces are not well filled. In difficult diagnostic problems it is not wise to "rule out" renal disease upon the basis of the usual intravenous pyelogram.

The cases reported illustrate once more the old precept that no single laboratory procedure is of as much value as a careful taking of history, physical examination and clinical impression. When these suggest kidney disease a normal result of urine analysis does not rule it out.

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